Claims

1. A heavy-vehicle tire comprising a tread which is formed from a cross-linked rubber composition, the composition comprising:

(a) an elastomeric matrix comprising a diene elastomer having at one or more of its chain ends a functional group which is active for coupling to a reinforcing white filler;

(b) a reinforcing filler comprising a reinforcing white filler in at least 50% by weight of total reinforcing filler; and

(c) a reinforcing white filler/functionalized diene elastomer bonding agent.

2. The heavy-vehicle tire according to Claim 1, wherein the diene elastomer is a copolymer formed from a conjugated diene monomer and a vinyl-aromatic compound.

3. The heavy-vehicle tire according to Claim 2, wherein the copolymer has a glass transition temperature of between -70°C and -20°C and a mass content of vinyl-aromatic units from 10% to 50%.

4. The heavy-vehicle tire according to Claim 1, wherein the functional group which is active for coupling to a reinforcing white filler is formed from a silanol group or a polysiloxane block having a silanol end.

5. The heavy-vehicle tire according Claim 1, wherein the functional group which is active for coupling to a reinforcing white filler is formed from an alkoxysilane group.

6. The heavy-vehicle tire according to Claim 1, wherein the reinforcing white filler is silica in an amount of from 20 to 80 phr (parts by weight per hundred parts of the elastomeric matrix).

7. The heavy-vehicle tire according to Claim 6, wherein the silica has a CTAB specific surface area from 80 m^2/g to 260 m^2/g.

8. The heavy-vehicle tire according to Claim 1, wherein the reinforcing white filler/functionalized diene elastomer bonding agent is a polysulphurized alkoxysilane.

9. The heavy-vehicle tire according Claim 1, wherein the composition further comprises an alkyl alkoxysilane covering agent for the reinforcing white filler.

10. The heavy-vehicle tire comprising a tread which is formed from a cross-linked rubber composition, the composition comprising:

(a) an elastomeric matrix comprising a diene elastomer co-polymer formed from a conjugated diene monomer and a vinyl-aromatic compound, the copolymer having a glass transition temperature of between - 70°C and - 20°C and a mass content of vinyl-aromatic units from 10% to 50%, the elastomer having at one or more ends thereof a functional group which is active for coupling to a reinforcing white filler, the functional group being formed from a compound selected from the group consisting of a silanol group, a polysiloxane block having a silanol end and an alkoxy silane,

(b) a reinforcing filler comprising at least 50% by weight of silica, the silica having a CTAB specific surface area from 80m^2/g to 260m^2/g, and

(c) a polysulfurized alkoxysilane reinforcing white filler/functionalized diene elastomer bonding agent.

11. The heavy-vehicle tire according to Claim 10 wherein the silica is present in the composition in an amount of from 20 to 80 phr (parts by weight of the elastomeric matrix).

12. The heavy-vehicle tire according to Claim 10 wherein the composition further comprises an alkylalkoxysilane covering agent for the silica.

13. A method for delaying, during travel, appearance of irregular wear in a tread of a tire suitable for bearing heavy loads, the method comprising:

preparing by thermomechanical working a rubber composition composition comprising:

(a) an elastomeric matrix comprising a diene elastomer having at one or more of its chain ends a functional group which is active for coupling to a reinforcing white filler;

(b) a reinforcing filler comprising a reinforcing white filler in at least 50% by weight of total reinforcing filler; and

(c) a reinforcing white filler/functionalized diene elastomer bonding agent;

and forming the tread from the composition.

14. The method according to Claim 13, wherein the diene elastomer is a copolymer formed from a conjugated diene monomer and a vinyl-aromatic compound.

15. The method according to Claim 14, wherein the copolymer has a glass transition temperature of between -70°C and -20°C and a mass content of vinyl-aromatic units from 10% to 50%.

16. The method according to Claim 13, wherein the functional group which is active for coupling to a reinforcing white filler is formed from a silanol group or a polysiloxane block having a silanol end.

17. The method according to Claim 13, wherein the functional group which is active for coupling to a reinforcing white filler is formed from an alkoxysilane group.

18. The method according to Claim 13, wherein the reinforcing white filler is silica in an amount of from 20 to 80 phr (parts by weight per hundred parts of the elastomeric matrix).

19. The method according to Claim 18, wherein the silica has a CTAB specific surface area from 80 m^2/g to 260 m^2/g.

20. The method according to Claim 13, wherein the reinforcing white filler/functionalized diene elastomer bonding agent is a polysulphurized alkoxysilane.

21. The method according to Claim 13, wherein the composition further comprises an alkyl alkoxysilane covering agent for the reinforcing white filler.

~~22~~. A method for delaying, during travel, appearance of irregular wear in a tread of a tire suitable for bearing heavy loads, the method comprising:

preparing by thermomechanical working a rubber composition composition comprising:

(a) an elastomeric matrix comprising a diene elastomer co-polymer formed from a conjugated diene monomer and a vinyl-aromatic compound, the copolymer having a glass transition temperature of between - 70°C and - 20°C and a mass content of vinyl-aromatic units from 10% to 50%, the elastomer having at one or more ends thereof a functional group which is active for coupling to a reinforcing white filler, the functional

group being formed from a compound selected from the group consisting of a silanol group, a polysiloxane block having a silanol end and an alkoxy silane,

(b) a reinforcing filler comprising at least 50% by weight of silica, the silica having a CTAB specific surface area from $80m^2/g$ to $260m^2/g$, and

(c) a polysulfurized alkoxysilane reinforcing white filler/functionalized diene elastomer bonding agent.

and forming the tread from the composition.

23. The method according to Claim 22, wherein the silica is present in the composition in an amount of from 20 to 80 phr (parts by weight of the elastomeric matrix).

24. The method according to Claim 22, wherein the composition further comprises an alkylalkoxysilane covering agent for the silica.